

**AMENDMENTS TO THE CLAIMS**

This listing of the claims replaces all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS**

1. Cancelled.
2. Cancelled.
3. Cancelled.
4. Cancelled.
5. Cancelled.
6. Cancelled.
7. [Currently Amended ] A method as claimed in claim 329 wherein the step of encoding comprises steps of:  
  
generating a ~~respective plurality of~~ scrambling patterns ~~for each of the transmitters so that different scrambling patterns are generated for transmitters for neighboring optical channels; and~~  
  
applying ~~each the~~ respective scrambling patterns to ~~a~~ respective one data signals ~~to be transmitted over the respective neighboring optical channels.~~
8. [Currently Amended] A method as claimed in claim 7 wherein the step of applying ~~the respective each~~ scrambling patterns comprises steps of, at each transmitter:  
  
aligning bits of the scrambling pattern with bits of the respective data signals with reference to a predefined starting point in the scrambling pattern; and  
  
applying a reversible Boolean operation to the aligned bits, to generate ~~an encoded~~ the scrambled data signal.

9. [Cancelled]
10. [Currently Amended] A method as claimed in claim 329 wherein the step of extracting comprises a step of removing segments from the pseudo-random bit sequence, each of the segments being used as a respective scrambling pattern.
11. [Currently Amended] A method as claimed in claim 329 further comprising a step of selecting a decoding scheme to apply to data received ~~on the neighboring~~ through each optical channels.
12. [Original] A method as claimed in claim 11 wherein the step of selecting comprises reading a hardware configuration setting in a decoder circuit of a receiver for the optical channel.
13. [Original] A method as claimed in claim 11 wherein the step of selecting comprises a step of reading a memory that stores a decoding scheme received in a message when the optical channel was commissioned.
14. [Original] A method as claimed in claim 11 wherein the step of selecting comprises a step of searching through a predefined set of decoding schemes adopted to decode data received on the optical channel.
15. [Original] A method as claimed in claim 14 wherein the step of performing a search procedure comprises at least one iteration of the steps:  
selecting a decoding scheme;  
applying the selected decoding scheme to at least a part of the data;  
calculating a bit error rate for the decoded data; and  
determining if the bit error rate is below a predetermined threshold.
16. Cancelled.
17. Cancelled.

18. Cancelled.
19. Cancelled.
20. Cancelled.
21. Cancelled.
22. Cancelled.
23. [Cancelled]
24. Cancelled.
25. Cancelled.
26. [Currently Amended] The system as claimed in claim 3423 further comprising a receiver that includes a descrambler that selects a decoding scheme to apply to data received on the optical channels.
27. [Previously Presented] The system as claimed in claim 26 wherein the descrambler comprises a decoder circuit having a hardware configuration setting that provides the decoding scheme to apply to data received.
28. [Previously Presented] The system as claimed in claim 26 wherein the descrambler comprises a memory that stores a decoding scheme received in a message when the optical channel was commissioned.
29. [Previously Presented] The system as claimed in claim 26 wherein the receiver comprises a memory that stores a predefined set of decoding schemes adapted to decode data received on the optical channel and the set of decoding schemes is searched to select the decoding scheme to apply to the data received.
30. [Previously Presented] The system as claimed in claim 29 wherein the descrambler searches the decoding schemes by applying a selected one of the

decoding schemes to at least a part of the data; calculating a bit error rate for the decoded data; and determining whether the bit error rate is below a predetermined threshold.

31. [Previously Presented] The system as claimed in claim 26 wherein the descrambler aligns bits of a decoding pattern with bits of the data received with reference to a predefined starting point in the descrambling pattern, and applies a reversible Boolean operation to the aligned bits, to generate a decoded data signal.
32. [NEW] A method of transmitting a wave division multiplexed (WDM) optical signal through an optical communications network, the method comprising steps of:  
  
scrambling each one of a plurality of data signals using a respective unique scrambling pattern, each scrambling pattern being substantially de-correlated from the other scrambling patterns at any given offset; and  
  
transmitting the scrambled data signals through respective channels of the WDM optical signal.
33. [NEW] A method as claimed in claim 32, wherein the step of encoding each data signal comprises steps of:  
  
generating a pseudo-random bit sequence; and  
  
extracting each of the scrambling patterns from the pseudo-random bit sequence.
34. [NEW] A system for transmitting a wave division multiplexed (WDM) optical signal through an optical communications network, the system comprising:  
  
a respective scrambler for scrambling each one of a plurality of data signals using a respective unique scrambling pattern, wherein each scrambling pattern is substantially de-correlated from the other scrambling patterns at any given offset; and  
  
a transmitter for transmitting each scrambled data signal through a respective channel of the WDM optical signal.

35. [NEW] A system as claimed in claim 34, wherein each scrambling pattern is extracted from a pseudo-random bit sequence.